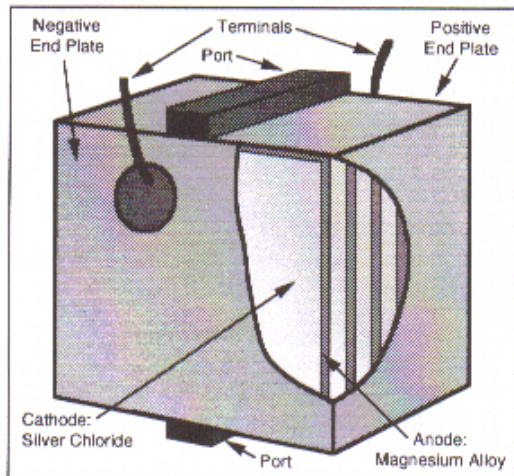


Product Notes

Sea Water Activated Batteries

Magnesium-Silver Chloride System
The Ultimate Power Source for Marine Applications



The culmination of more than 20 years of design and development, the Ultralife Sea water activated primary battery system offers exceptional reliability and performance. Applications in which Ultralife sea water batteries excel include sonobuoys, underwater defense systems, air-sea rescue equipment, airborne surveillance drones and meteorological radiosondes.

Ultralife's sea water activated battery system has a high energy density magnesium-silver chloride chemistry that is ideal for applications with critical weight, space and energy requirements. The system features outstanding electrode stability – batteries can be stored almost indefinitely, in a wide variety of conditions, without any appreciable deterioration of capacity or performance. The system also provides fast

activation in all sea conditions, from sub-zero temperatures upwards and from the surface down to any depth.

Each sea water battery design is unique to each application and operating environment. Armed with the following information, Ultralife will meet any specification precisely, with maximum energy efficiency and no wasted capacity.

- Voltage required
- Duty cycle required
- Activation time required
- Salinity of service environment
- Depth required
- Storage conditions required
- Shock and vibration tolerances
- Size restrictions

Ultralife provides expertise throughout the entire design process, from analysis of required technical specifications to complete testing in any conditions likely to be encountered in actual service. Ultralife batteries are assembled in strictly controlled conditions to assure the highest quality, and Ultralife holds NATO's highest approval rating – AQAP-1.

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Benefits of Ultralife Sea Water Activated Batteries

Indefinite Storage Life

Seawater serves as the electrolyte in our batteries, activating the electrochemical process; thus batteries remain inactive until sea water is introduced. In dry conditions, batteries can be stored indefinitely with no degradation in performance.

High Humidity Tolerance

Even in high humidity, Ultralife seawater batteries perform well. One sonobuoy battery, for example, withstands 90% relative humidity at +32°C for 90 days with no appreciable loss of capacity.

Wide Storage Temperatures

Typically, Ultralife sea water batteries are designed for storage from -50°C to +70°C with fast activation and no loss of capacity – even after storage of seven years or more at these temperatures.

Wide Operating Conditions

Ultralife seawater batteries operate well in all sea conditions, maintaining both voltage and capacities in temperatures from 0°C to +35°C in salinity from 1.5 to 3.6% (by weight) at any depth.

High Energy Density

Ultralife's magnesium-silver chloride batteries offer extremely high energy density - up to 165 Wh/kg.

Variable Duty Cycle

Ultralife seawater batteries can be designed for a wide range of duty cycles, from a few seconds to several days, for both low and very high current applications.

Rapid Activation

Ultralife seawater batteries can reach full operating voltage under load in just fractions of a second.

Wide Current Capabilities

Ultralife seawater batteries operate successfully over a wide range of current requirements, pulsed or constant.

Wide Voltage Range

Nominal cell voltage for the silver chloride system is 1.5 volts. Batteries can be designed for any single voltage or multiple voltages. Under constant load, voltage will remain extremely stable throughout the prescribed duty cycle.

Versatile Design

Cell construction variables allow battery designs to satisfy virtually any dimensional requirements.

Safe Storage and Operation

Unlike most other primary battery systems, Ultralife seawater-activated batteries are inert and completely non-hazardous in storage. They can not be short circuited or accidentally charged.

Self-Contained Electrolyte Option

Ultralife seawater batteries are not limited to water-deployed applications; they can be designed with self-contained electrolytes for airborne or land-based use.

Shock Resistance

Ultralife batteries will withstand extreme thermal and mechanical shock.